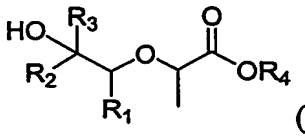
WHAT IS CLAIMED IS:

1. A method for making a compound having the formula:

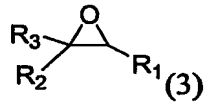


(2)

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl, cycloalkenyl, or oxacycloalkyl, or wherein any two of R_1, R_2 , and R_3 can form a ring containing 5 to 15 carbon atoms, and wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected forms thereof, andwherein R_4 is a group having between 1 and 50 carbon atoms selected from the group consisting of straight or branched alkyl groups, straight or branched alkenyl groups, cycloalkyl or cycloalkenyl groups, alkyloxyalkyl groups, aromatic groups, aromatic-aliphatic groups, hydroxy-functional alkyl groups, and combinations thereof, or a polymer chain comprising one or more ester or ether, or amide bonds,

said method comprising:

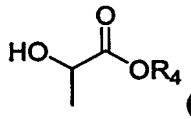
a) providing an epoxide of formula (3):



(3)

and

b) reacting the epoxide with a lactic acid ester of formula (3):



(4)

where the epoxide and ester are in the form of separate molecules or part of the same molecule,

thereby providing the compound of formula (2).

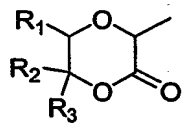
2. A method of claim 1 wherein the reaction between the epoxide and the lactic acid ester is carried out in the presence of a catalyst selected from the group comprising boron trifluoride catalysts, acid catalysts, and combinations thereof.

3. A method of claim 1 wherein the reaction between the epoxide and the lactic acid ester is carried out in the presence of excess lactic acid ester, with the molar ratio between the epoxide and the ester being between approximately 1:1.1 to 1:1000.

4. A method of claim 1 wherein the lactic acid ester is glycidyl lactate .

5. A method of claim 1 wherein the reaction between the epoxide and the lactic acid ester is conducted in the presence of a co-solvent.

6. A method of making a compound having the formula:

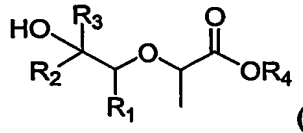


(1)

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl, cycloalkenyl, or oxacycloalkyl, or wherein any two of R_1, R_2 , and R_3 can form a ring containing 5 to 15 carbon atoms, and wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected forms thereof,

said method comprising:

a) providing a 2-(2'-hydroxyethyl)propionate ester having the formula:



(2)

where R_4 is a group having between 1 and 50 carbon atoms selected from the group consisting of straight or branched alkyl groups, straight or branched alkenyl groups, cycloalkyl or cycloalkenyl groups, alkyloxyalkyl groups, aromatic groups, aromatic-

aliphatic groups, hydroxy-functional alkyl groups, and combinations thereof, or a polymer chain comprising one or more ester or ether, or amide bonds,

and

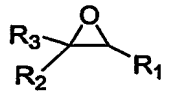
b) effecting the cyclization of the 2-(2'-hydroxyethyl)propionate ester to form the compound of formula (1).

7. A method as claimed in claim **6**, wherein cyclization is carried out by saponifying the 2-(2'-hydroxyethyl)propionate ester of formula (2), followed by acidification.

8. A method as claimed in claim **6** wherein cyclization is carried out by transesterifying the 2-(2'-hydroxyethyl)propionate ester of formula (2) in the presence of a catalyst.

9. A method as claimed in claim **8** wherein cyclization is carried out by treating the 2-(2'-hydroxyethyl)propionate ester with catalyst acid or boron trifluoride to eliminate water, followed by hydrolysis of the ester and acidification.

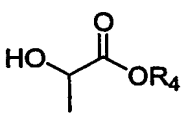
10. A method of claim **6** comprising reacting an epoxide of formula (3):



(3)

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl, cycloalkenyl, or oxacycloalkyl, or wherein any two of R_1, R_2 , and R_3 can form a ring containing 5 to 15 carbon atoms, and wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected forms thereof,

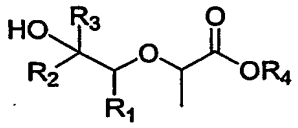
and a lactic acid ester of formula (4):



(4)

wherein R_4 is a group having between 1 and 50 carbon atoms selected from the group consisting of straight or branched alkyl groups, straight or branched alkenyl groups, cycloalkyl or cycloalkenyl groups, alkyloxyalkyl groups, aromatic groups, aromatic-aliphatic groups, hydroxy-functional alkyl groups, and combinations thereof, or a polymer chain comprising one or more ester or ether, or amide bonds,

to form a hydroxy acid intermediate having the formula (2):

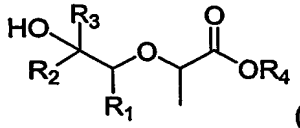


(2),

that cyclizes in situ to form the dioxanone of formula (1).

11. A method as claimed in claim **6** wherein cyclization is carried out by exposing the 2-(2'-hydroxyethyl)propionate ester to an enzyme selected from the group consisting of lipases, esterases, and combinations thereof.

12. A compound having the formula:



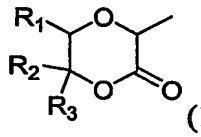
(2)

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl, cycloalkenyl, oxacycloalkyl, or wherein any two of R_1, R_2 , and R_3 form a ring containing 5 to 15 carbon atoms, and wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected forms thereof, and

wherein R_4 hydrogen or a group having between 1 and 50 carbon atoms selected from the group consisting of straight or branched alkyl groups, straight or branched alkenyl groups, cycloalkyl or cycloalkenyl groups, alkyloxyalkyl groups, aromatic

groups, aromatic-aliphatic groups, hydroxy-functional alkyl groups, and combinations thereof, or a polymer chain comprising one or more ester or ether, or amide bonds.

13. A compound having the formula:



(1)

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl, cycloalkenyl,, oxacycloalkyl, or wherein any two of R_1, R_2 ,and R_3 form a ring containing 5 to 15 carbon atoms, and, wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected form thereof,

with the proviso that:

a) where R_2=R_3=H, R_1 cannot be methyl or H,

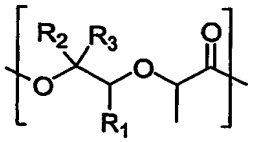
b) where R_1=R_2=H, R_3 cannot be methyl or ethyl,

c) where R_3=H, and R_1 and R_2 form a cyclohexane or norbornene ring, at least one additional carbon atom, oxygen atom, or double bond must be present in the structure of R_1 or R_2.

14. A composition comprising a base material and an amount of a compound according to claim 13 effective to impart a fragrance or a flavor to the base material.

15. A method of imparting a fragrance or a flavor to a base material comprising combining the base material with an effective amount of a compound according to claim 13.

16. A polymer composition comprising at least 0.05 molar percent of at least one unit having formula (10):



(10),

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl or cycloalkenyl group, oxacycloalkyl, or wherein any two of R_1, R_2 ,and R_3 can form a ring containing 5 to 15 carbon atoms, and

wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected form thereof,

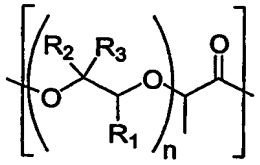
with the proviso that:

a) where R_2=R_3=H, R_1 cannot be methyl or H,

b) where R_1=R_2=H, R_3 cannot be methyl or ethyl,

c) where R_3=H, and R_1 and R_2 form norbornene ring, at least one additional carbon atom, or an oxygen atom, must be present in the structure of the said unit of formula (10).

17. A polymer composition comprising at least 0.05 molar percent of at least one



repeat unit having formula (33):

(33),

wherein R_1, R_2, R_3 are each independently H, straight or branched alkyl group, straight or branched alkenyl group, carboxyalkyl, carboxyaryl, aromatic group, aromatic-aliphatic group, alkyloxyalkyl, aryloxyalkyl, cycloalkyl or cycloalkenyl group, oxacycloalkyl, or wherein any two of R_1, R_2 ,and R_3 can form a ring containing 5 to 15

carbon atoms, and wherein any of R_1, R_2, or R_3 optionally contain one oxygen-functional group selected from hydroxyl, carbonyl or protected form thereof,

and wherein n is an integer with value selected in the range from 2 to about 50, with the proviso that R_1, R_2, R_3, cannot be H at the same time.